UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,621	10/14/2003	Stewart Frederick Bryant	50325-0823	5094

29989 7590 02/15/2008

HICKMAN PALERMO TRUONG & BECKER, LLP
2055 GATEWAY PLACE
SUITE 550
SAN JOSE, CA 95110

EXAMINER	
PHAM, BRENDA H	

ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
02/15/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary	Application No.	Applicant(s)	
	10/685,621	BRYANT ET AL.	
	Examiner	Art Unit	
	Brenda Pham	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-12,16,18-24,27-29 and 32-48* is/are rejected.

7)☒ Claim(s) *8,9,13-15,25,26,30 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/28/08;11/21/07;11/02/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-48 are pending in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 42 recites the limitation "the method" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 37-41, 44-48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-7, 10-12, 16-24, 27-29 and 32-36, 42-43, are rejected under 35 U.S.C. 102(e) as being anticipated by Harper (US 7,058,016 B1).

Regarding claims 1, 18, Harper discloses an apparatus (claim 18) and method (claim 1) of generating routing information in a data communications network having, as elements, nodes and links, the method comprising the steps of performed at a first network element of:

receiving at the first network element information relating to a change in the network at a second network element **("new route information is received", Abstract)** determining a set of network elements affected by the change in the network **("evaluating existing routes of the node when new route information is received", abstract)**, identifying a sequence in which updating of routing information at each element in the affected set should occur **(identifying a sequence by recalculating routes or the node only when the new route information improves at least one of the existing routes, Abstract)**, and updating the routing information at the first element in sequence **(updating network topology after the recalculating routes)**.

Regarding claims 2 and 19, Harper further teaches determining if the updated routing information differs from the routing information prior to the network change and

maintaining the prior routing information at the first network element upon receipt of the information relating to the change if not.

Harper teaches "an incremental Dijikstra's algorithm can incorporate changes to the information about individual links in an optimized way, without examining every node. Nodes with new route information (Link State Packets) are sorted into order of cost from the current node (the root). Each change in state is then evaluated. If it has no effect on existing routes it is ignored. If it improves existing routes, the routes are re-evaluated starting from the changed node. If existing routes are lost or made worse, the entire subtree from the affected link is re-evaluated. Each node is reattached at the best (lowest cost) point in the remaining spanning tree. If possible, and routes re-evaluated starting from the nodes that have been reattached. The effect is equivalent to running the full Dijkstra algorithm, at a much lower computation cost." (Col. 5, line 30-45).

Regarding claims 3, 20, 36, 43, in which the first network element updates after a delay derived from the updating sequence **("With link state routing, each router must discover its neighbors and learn their network addresses, measure the delay to each of its neighbors, construct a packet containing this information, send the packet to all other routers and computer the shortest path to every other router").**

Regarding claims 4 and 21, Harper further teaches determining, as an affected set, the set of nodes from which a target network element is reachable via the second

network **(Nodes with new route information re-evaluated new routes starting form the changed node.)**

Regarding claims 5 and 22, Harper teaches the second network element is a link and the target network element is an adjacent node (see Figure 9).

Regarding claims 7, 10, 12, 24, 27, 29, wherein the delay is a function of the number of hops from the first network element to the furthest network element in the affected set (see column 5, line 30-50).

Regarding claims 16 and 33, Harper further teaches receiving a notification from a preceding network element in the sequence and updating the routing information upon receipt of the notification **(According the column 4, line 53-60, When router 16 is booted, its first task is to learn who its neighbors are. If accomplishes this goad by sending a special HELLO packet on each point-to-point link. The router 16 on the other end is expected to send back a reply telling who it is. Once the information needed for the exchange has been collected, the next step is for each router to build a packet containing all of this data. The packet (a Link State Packet) starts with the identity of the sender, followed by a sequence number...The link state database is synchronized by having the routers exchange LSPs to build the link state database...the router's links state database is thus updated.)**

Regarding claims 11 and 28, wherein the change in the second network element comprises a link cost increase and the affected set comprises the set of network elements from the target network element is reachable prior to the network change **("The link state change results in bad news if the node's current path to the root becomes more expensive (including the case where it is no longer available at all). In this case there may be a better route via a different parent. (column 6, line 10-20).**

Regarding claim 29, wherein the change in the second network element comprises a link cost decrease and the affected set comprises the set of network elements from which the target network element is reachable after the network change **("For each link in current LSP the cost to the neighbor via this node is calculated (i.e., costToRoot plus the link cost), (step 272). If this cost is less than the neighbor's current cost (including the case where the neighbor is not yet reachable), the current node is set as the neighbor's only parent, its costToRoot is set, and its is added to Tent in the appropriate position(Col. 9-10, line 65-67, 1-10, respectively, also see figure 4).**

Regarding claims 35 and 42, Harper further teaches an apparatus for generating routing information in a data communications network having as elements links and nodes, the apparatus comprising one or more processors; a network interface communicatively coupled to the processor and configured to communication one or

more packet flows among the processor and a network; and a computer readable medium comprising one or more sequence of instructions for generating routing information which instructions, when executed by one or more processors, cause the one or more processors to generate routing information in a data communications network having as elements, nodes and links (see figure 2).

Response to Arguments

8. Applicant's arguments filed 12/06/07 have been fully considered but they are not persuasive. Applicant argued in the REMARK that "a sequence for updating of routing information at each element in the affected set". Examiner respectfully disagrees because Harper indeed teaches this claimed feature. Harper teaches "a sequence" in term of a group or set of nodes or subtree of spanning tree, such as routes or path (see col. 5, line 9-15). Harper teaches a method of updating a tree structure of a root node in a computer network of interconnected nodes after a change in the network's topology comprises receiving new route information at the root node and applying an incremental Dijkstra algorithm to the root node to derive a new sequence (route) of nodes for transmit data only when the new route information improves at least one of the existing routes. Examiner believes Harper indeed teach all the claimed limitation in the claims. Therefore rejection stand.

Allowable Subject Matter

9. Claims 8, 9, 13-15, 25, 26, 30, 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Huai et al (US 6,928,484 B1) discloses method and apparatus for discovering edge-disjoint shortest path pairs during shortest path tree computation.

Kodialam et al (US 6,996,065 B2) disclose dynamic backup routing of network tunnel paths for local restoration in a packet network.

Rhodes (US 7,158,486 B2) discloses method and system for fast computation of routes under multiple network states with communication continuation.

Yoshiba et al (US 2005/0038909 A1) disclose static dense multicast path and bandwidth management.

Narvaez et al (US 6,704,320 B1) disclose dynamic algorithm for determining a shortest path tree between network nodes.

Narvaez-Guarnieri et al (US 6,098,107) disclose dynamic algorithms for shortest path tree computation.

Conclusion

11. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Pham whose telephone number is (571) 272-3135. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild, can be reached on (571) 272-2092.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

February 14, 2008
Brenda Pham

Brenda H. Pham

BRENDA PHAM
PRIMARY EXAMINER